St. Vincent Healthcare

Hospital background

St. Vincent Healthcare (SVH) is located in Billings, MT and is affiliated with SCL Health. SVH is currently licensed for 286 inpatient beds and serves over 400,000 patients from a four-state area, making it one of Montana's leading healthcare providers. SVH offers a comprehensive range of nationally recognized services, including: cardiology, neurology, stroke care, pediatrics, orthopedics, Level II Trauma Center, and Level III NICU and PICU.

Infusion device connectivity to the EMR: hospital objectives

SVH had two main objectives for pursuing infusion interoperability:

- Improve patient safety (e.g., minimize programming errors from manual entry, improve drug-library use compliance)

- Improve medication-administration documentation accuracy and timeliness, to improve patient care and revenue management

Project scope

Whole-house deployment, inpatient areas included: infusion unit, med/surg, neuro, ICU, peds/PICU, maternity, ED and oncology. Clinics and procedural areas were considered out of scope for this project. NICU became out of scope during implementation due to unforeseen challenges in the workflow and infusion data-set builds, but work continues to eventually bring the unit in scope.

Project timeline and schedule

From kickoff to go-live, the project took seven months. SVH went live with Alaris®/Epic infusion interoperability on May 13, 2014.

Key lessons learned

Resources

This is a multidisciplinary effort that requires all stakeholders to be involved throughout the entire process, especially nursing. For this to be successful, stakeholders must come together for an open and honest review of all clinical workflows around IV infusion administration. Standardization is key, followed by ongoing nursing education.

- SVH's goal was to have one full-time pharmacy resource dedicated as the project lead, with ad-hoc pharmacy support from throughout the organization as needed. Unfortunately, this pharmacy resource left the organization in the middle of implementation, creating a minor setback. Therefore, we recommend having coleads or multiple subject-matter experts involved with the project to avoid a similar type of situation.

- We recommend having a resource dedicated to owning the Alaris dataset (main editor).

- We recommend having a local steering committee consisting of pharmacy, clinical informatics, clinical engineering, nursing, quality and IT.

Logistics

It is imperative to think through the physical setup in the room; for example, how far is the computer from the bed or from where the IV bag and pump are scanned? Are scanners tethered or wireless? How do you handle isolation patients? In addition to physical room setup, it is also important to understand the reliability of wireless connectivity in your hospital. Are there coverage issues for specific units? All these questions have solutions, but you need to be prepared.

Nurse workflow

This project uncovered a number of workflows and work-arounds that were being done by the SVH nursing staff; pharmacy was unaware of these variations. This discovery supports the aforementioned need for cross-functional resources and stakeholder support, and also highlights the importance of thinking carefully about practice in conjunction with policies, procedures and protocols. Some workflow variation examples included:

- **Bolus doses/fluids.** Variation was discovered in how nurses bolus in different units. For example, some nurses bolus from the bag, while other nurses grab a separate container. This also highlighted the variation in physician ordering practices; sometimes boluses are ordered in a nursing order, in the comments of a maintenance intravenous fluid (MIVF) order or via a separate electronic prescription (ERX). These ordering variations increase downstream variations in practice, both for administration and documentation. The cross-functional teams determined that the new workflow would require a nurse to place a separate order for the bolus in the electronic health record (EHR), as well as obtain a separate bag, tubing, pump module, etc. for it. This workflow may or may not be the final recommendation for your organization, but the takeaway here is that it is best to have a standardized process for boluses.

- **IV pump use.** Medications not previously thought to be administered on an IV pump were actually being set up on a device by various nurses *(e.g., IV push, drugs in neonatal areas)*. To accommodate this workflow, the drug library had to be expanded.

- **Intermittent antibiotics.** To program the pump via interoperability for intermittent antibiotics, a primary fluid needs to be running on the device. Therefore, a policy had to be created to allow nurses to order a small bag of fluid to be used as a line flush to run while programming the intermittent and after the medication was complete.

Testing

This project uncovered some misperceptions around dataset alignment. The perception was that the Alaris drug library and EMR formulary matched, but once testing began, it was apparent they did not. For example, dosing units or concentrations weren't actually a match. Recommend testing everything; include different ordering methods *(e.g., computerized physician order entry [CPOE] vs. pharmacy entered)* in your test cases, as well as various clinical scenarios.

Post go-live compliance and metrics

The overall adoption rate is currently at 70 percent, which we are looking to improve, but feel optimistic about the results, especially since we have only been using the solution for a short time. Key items to note:

- Compliance comes down in ED and Maternity/Labor and Delivery areas, which is partly due to a positive workflow change that shifted the nursing staff to use the Alaris Pump more than they did prior to the implementation of Interoperability *(those areas often ran infusions via gravity)*.

- For the main inpatient nursing units, compliance can range from 70 to 90 percent; those units that are most engaged are consistently in the 85 to 90 percent range.

Further analysis over the past few months has shown a significant decrease in total alerts and reprogrammed infusions, as well as a significant increase in patient ID usage *(up from 40 to 80 percent).* We believe these improved results are a direct result of prepopulating versus manually entering, infusion parameters on the device.

For our observation and outpatient areas, where recording the actual time *(start/stop)* of IV administration is required for proper reimbursement, we calculated a $4.7 million annual revenue opportunity for the SCL Health System by capturing previously lost charges; SVH represents 21 percent of the system's overall opportunity. After the first month of go-live at SVH,we had close to zero losses in our reimbursement claims. Since then, we have seen a slight uptick in monthly losses, which is largely due to education opportunities. Overall, lost outpatient revenue has been reduced by roughly 40 percent since go-live. We see this as a large opportunity for our organization that can be solved through interoperability.

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